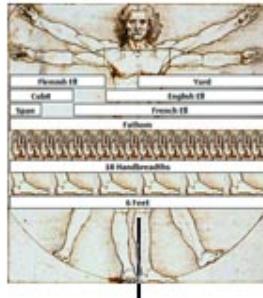


1. Introductions
2. Lectures notes and readings

Introductions

A course in

# Engineering Biomechanics



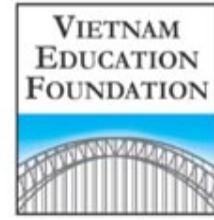
Hanoi University of Technology

Dai Hoc Bach Khoa Ha Noi



Offered with support from the  
Vietnam Education Foundation (USA)

Baylor  
UNIVERSITY



Benjamin S. Kelley, Ph.D., P.E.  
Professor and Dean  
School of Engineering and Computer Science  
Baylor University, Waco, Texas (USA)  
VEF U.S. Faculty Scholar  
Spring 2009



## Acknowledgements

### Resource Preparation Assistance

Mr. B. Rhett Rigby

Mechanical Engineering Graduate Student

Baylor University

### **Production, Printing and Assembling Assistance**

Ms. Leigh Ann Marshall

Director of Advancement

Ms. Cheryl A. Tucker

Assistant to the Dean

School of Engineering and Computer Science

Baylor University

### **Course Notes and Lectures**

Dr. Brian A. Garner

Associate Professor of Mechanical Engineering

Baylor University

### **Program Coordination**

MSc. Vu Duy Hai

Lecturer, Researcher, PhD. Candidate

Department of Electronics Technology and Biomedical Engineering

Faculty of Electronics and Telecommunications

Hanoi University of Technology

## **Program Support**

Vietnam Education Foundation (USA)

Dr. Van-Toi Vo, Executive Director

Dr. Lynne McNamara, Deputy Executive Director

Ms. Lana Walbert, Director of Finance, Accounting & Administration

Dr. Phuong Nguyen, Country Director

Ms. Binh Dang, Program Manager

Lectures notes and readings

<b>Chapter #</b>	<b>Title</b>	<b>Power Point Slices to download</b>	<b>Readings to download</b>
1	Course Expectations	<a href="#"><u>1-Slides-CourseIntro.pdf</u></a>	<a href="#"><u>1-ReadingSyllabus&amp;DesignPro</u></a>
2	Introduction: History	<a href="#"><u>2-Slides - History.pdf</u></a>	<a href="#"><u>2-Reading - Cambridge.pdf</u></a>
3	Introduction to Design: The Process	<a href="#"><u>3-Slides-DesignProcess.pdf</u></a>	<a href="#"><u>3-Reading-EngrDesignProce</u></a>

4	Kinetics:Forces (Linear velocities, accelerations)	<a href="#">4-Slides - Kinetics.pdf</a>	<a href="#">4-Reading - Sellers.pdf</a>
5	Introduction to Design:The Report	<a href="#">5-Slides- Design Report.pdf</a>	<a href="#">5-Reading-DesignReportGuidelines.pdf</a>
6	Kinematics	<a href="#">6-Slides - Kinematics.pdf</a>	<a href="#">6-Reading - Robertsonch5pt1 Robertsonch5pt2.pdf</a>
7	Introduction to Design:The Presentation	<a href="#">7-Slides- TechnicalPresentations.pdf</a>	<a href="#">7-Reading-TechnicalPresentations.pdf</a>

8	Statics:Basics	<a href="#"><u>8-Slides - Statics.pdf</u></a>	<a href="#"><u>8-Reading - Robertsonch3pt1</u></a> <a href="#"><u>Robertsonch3pt2.pdf</u></a> ; <a href="#"><u>8-Reac</u></a> <a href="#"><u>Robertsonch4.pdf</u></a>
9	Human Anatomy:Musculoskeletal System	[missing_resource: 9- Slides – Anatomy.pdf]	<a href="#"><u>9-Reading - Anatomy.pdf</u></a>
10	Statics:Bioapplications	<a href="#"><u>10-Slides - Statics.pdf</u></a>	<a href="#"><u>10-Reading - Goyal-4.pdf</u></a>

11	Human Anatomy: Simple & Articulating Joints	<a href="#">11-Slides - Anatomy.pdf</a>	<a href="#">11-Reading - Harmony.pdf</a>
12	Mechanics of Materials: Stress and Strain	<a href="#">12-Slides - Mechanics of Materials.pdf</a>	<a href="#">12-Reading - Rezaei.pdf</a>
13	Getting Acquainted with Elluminate		[missing_resource: 13-Reading] [missing_resource: 13-Reading]
14	Mechanics of Materials: Material Properties	<a href="#">14-Slides - Mechanics of Materials.pdf</a>	<a href="#">14-Reading - Rezaeich2pt1.pdf</a> <a href="#">Rezaeich2pt2.pdf</a>

15	Introduction to Stress/Bending	<a href="#"><u>15-Slides - Stress and Bending.pdf</u></a>	
16	Advanced Stress/Bending:Neutral Axis, Parallel Axis Theorem	<a href="#"><u>16-Slides - Advanced Stress.pdf</u></a>	<a href="#"><u>16-Reading - Rapoff.pdf</u></a>

17	Structure of Bone	<a href="#"><u>17-Slides - Bone.pdf</u></a>	<a href="#"><u>17-Reading - Yun.pdf</u></a>
18	Mechanical Properties of Bone	<a href="#"><u>18-Slides - Bone.pdf</u></a>	<a href="#"><u>18-Reading - Christopher.pdf</u></a>

19	Fracture Mechanics and Breaks	<a href="#"><u>19-Slides - Breaks.pdf</u></a>	<a href="#"><u>19-Reading - Alms.pdf</u></a>
20	Fracture Mechanics and Healing	<a href="#"><u>20-Slides - Healing.pdf</u></a>	<a href="#"><u>20-Reading - Kalfas.pdf</u></a> ; <a href="#"><u>20-Calgary.pdf</u></a>
21	Tendons/Ligaments:Structure and Properties	<a href="#"><u>21-Slides - tendon_ligament.pdf</u></a>	<a href="#"><u>21-Reading - Hollister.pdf</u></a>

22	Tendons/Ligaments: Mechanical and Viscoelastic Properties	<a href="#"><u>22-Slides - tendon_ligament.pdf</u></a>	<a href="#"><u>22-Reading - Rapoff.pdf</u></a>
23	Articular Cartilage: Structure and Function	<a href="#"><u>23-Slides - Articular Cartilage.pdf</u></a>	<a href="#"><u>23-Reading - Mansour.pdf</u></a>

24	Articular Cartilage:Mechanical Properties	<a href="#"><u>24-Slides - Articular Cartilage.pdf</u></a>	<a href="#"><u>24-Reading - Rapoff.pdf</u></a>
25	Introduction to Joints:Structure and Function	<a href="#"><u>25-Slides - Joints.pdf</u></a>	<a href="#"><u>25-Reading - Rapoff.pdf</u></a>
26	Introduction to Joints:Types and Movement	<a href="#"><u>26-Slides - Joints-1.pdf</u></a>	

27	Implants:Devices and Materials	<a href="#"><u>27-Slides - Implants.pdf</u></a>	<a href="#"><u>27-Reading - Goyal.pdf</u></a>
28	Implants:Bone Plate Analysis and Design	<a href="#"><u>28-Slides - Bone Plate.pdf</u></a>	<a href="#"><u>28-ReadingBonePlateBiome Kelley.pdf</u></a>
29	Knee Biomechanics:Structure and Function	<a href="#"><u>29-Slides - Knee Biomechanics.pdf</u></a>	<a href="#"><u>29-Reading - Blue Medical.p</u></a>

30	Knee Biomechanics:Movement and Forces	<a href="#"><u>30-Slides - Knee Biomechanics.pdf</u></a>	
33	Hip:Structural Components	<a href="#"><u>33-Slides - Hip Biomechanics.pdf</u></a>	<a href="#"><u>33-Reading - About Joints.pc</u></a>
34	Hip:Biomechanical Properties	<a href="#"><u>34-Slides - Hip Biomechanics.pdf</u></a>	<a href="#"><u>34-Reading - About Joints.pc</u></a>

35	Spine:Structural Components	<a href="#"><u>35-Slides - Spine Biomechanics.pdf</u></a>	<a href="#"><u>35-Reading - Benzel.pdf</u></a>
36	Spine:Biomechanical Properties	<a href="#"><u>36-Slides - Spine Biomechanics.pdf</u></a>	<a href="#"><u>36-Reading - Rapoff.pdf</u></a>

38	Introduction to Muscle:Anatomy	<a href="#"><u>38-Slides - Muscle.pdf</u></a>	<a href="#"><u>38-Reading - Rapoff.pdf</u></a>
39	Introduction to Muscle:Micro-and Macro-Structure	<a href="#"><u>39-Slides - Muscle.pdf</u></a>	
40	Introduction to Muscle:Mechanics	<a href="#"><u>40-Slides - Muscle.pdf</u></a>	